Missouri Surveyor

A Quarterly Publication of the
Missouri Society of Professional Surveyors

Jefferson City, Missouri — March 2020

What's in this issue...

CALENDAR OF EVENTS

2020

April 30 - May 2, 2020
42nd Annual Spring Workshop
Lodge of Four Seasons
Lake Ozark, MO

July 11, 2020
Board Meeting
MSPS Office, Jefferson City, MO

August 12-14, 2020
Review Course
Jefferson City, MO 65101

October 22-24, 2020
63rd Annual Meeting and Convention
Oasis Hotel and Convention Center
Springfield, MO

December 5, 2020
Board Meeting
MSPS Office
Jefferson City, MO

Front Cover: As does the sun, spring arises on a Missouri morn; fog's shades are drawn, the cool of winter is soon gone. Photograph by Robert MacKenzie of Jefferson City.

Donald R. Martin, Editor

Notes from the Editor's Desk

Donald R. Martin

Welcome readers to the March 2020 Edition of *Missouri Surveyor*. This is of course the favorite edition for ol' pard Tripod the three-legged ground hog, what with the annual commemoration of February 2nd. But this year our trusty land beaver shared the day with Kansas City Chiefs as they were crowned Superbowl Champions! While this accomplishment does belong to Reid, Mahomes and the 2019 team, do any readers recall Lenny Dawson, Otis Taylor, Warpaint and Tony DiPardo and his Orchestra? For a little fun, Tripod looked up some facts from fifty (as in years ago…the last time the Chiefs prevailed as Champs):

- The game made its way into homes via "aerials" and "rabbit ears," no dishes, no cable.
- A gallon of gas was $0.36 (that is $2.19, adjusted for inflation).
- The New York Mets had recently won the World Series; Manager Gil Hodges.
- Jack Buck was the broadcast announcer for the game.
- Doc Severinsen performed the National Anthem.
- Average price for a ticket to the game that day was $15 ($98, adjusted for inflation).
- America had resumed the *Draft Lottery* for the first time since WWII.
- The biggest draw at the box office was "Patton" (first time I heard 'bad' words on film).
- Young people were listening to "Abbey Road" by the Beatles.
- Halftime entertainment included a reenactment of the *Battle of New Orleans* ("…it's Colonel Jackson at the 50, the 40, the 30, he could go all the way…!")

Ah, the memories…or history, depending on your age.

Regarding content, we'll leave it to the readers to sort out for this edition. But do give your attention to pages 14 – 18. Our friend Dan Govero shares his heartfelt concerns for the profession in *The Diminishing Surveyor*, followed by a News Release form the *Alliance for Responsible Professional Licensing* – good info to know the next time someone suggests that people don't care whether "professionals" are licensed.

Well, I best break-it-down and bunch-it-up so I can start getting ready for the next edition…I'll get back with ya' then…

Donald

THE MISSOURI SURVEYOR

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President's Message

Susanne Daniel

Greetings! I am happy to report that spring is back. Winter offered plenty to celebrate with the holidays and the Chiefs' epic comeback to win, but I'm tired of being hit in the side of the face with cold drizzle. It is time to move into warmer weather.

Despite the sleet and snow, we had a good turnout for the February 6th Board Meeting. Highlights included updates from Ron Heimbaugh and Jess Moss on the State Plane Coordinate System 2022. Stakeholders asserted a preference to use Low Distortion Projections for our multi-zone state plane coordinate system and its plan is being fine-tuned for submittal to NGS by the end of March.

NSPS Director Mike Zahner shared news on licensing issues and he reported on an apprentice program Illinois surveyors have introduced giving tax credits for certain hires. He also reminded the group about the NSPS pod casts as well as the News & Views publication available through email.

Plans for the 2020 Annual Meeting in Springfield addressed by Joe Clayton including: an antique compass raffle being sponsored by the Ozark and Southwest Chapters, a golf tournament and a shooting competition. Joe also reported on a future land surveying display in the Capitol, the Osage Treaty Line retracement, the renaming of the Land Surveying Program building to honor Robert E. Myers and a new Treaty Line retracement in Oklahoma.

Sandy Boeckman presented the Spring Workshop flyer for preview. This workshop will address some of our business struggles such as insurance, retirement, and taxes. A session on CPR will be given by the Johnson County Ambulance District. Even if you don't plan to attend the session, please consider becoming CPR certified. You never know when you will need the skill. Also occurring will be a golf tournament with the proceeds from this tournament and the Annual Meeting golf tournament going to the PAC Committee.

And finally, our Legislative Committee recommended and the Board has adopted the actions below:

HB1216 – Governor to keep list of names for state boards, commissions etc. **NO POSITION**
HB1358 – by Ellbracht requiring survey. **NO POSITION**
HB1452, HB1511, SB560, & SB673 – License reciprocity. Since the board would still administer state exam it was suggested to take **NO POSITION** (but keep watching for developments)
HB2046 similar to previous bills but without reference to non-residential military spouses. **REMAIN NEUTRAL** at this time
HB1603 – Revises Chapter 60 by Mayhew. **SUPPORT**
SB913 – Peer review process. **SUPPORT** or **REMAIN NEUTRAL**
HB2164 – Rename land survey building in Rolla to "Robert E. Meyers Building". This is our bill sponsored by Robert Ross. We are **SUPPORTING**

And it is important to remember that Rep. Rocky Miller and Rep. Robert Ross will be term limited and unable to retain their house seats. Rep. Ross will be challenging Rep. Eslinger and former Rep. Van Kelley for Senator Cunningham's seat. And Rep. Mayhew will be seeking his second term already. Rep. Ross is facing some very tough competition and could use any support we are able to provide. Best wishes to Rep. Miller, we appreciate all of his hard work. He will be missed.

Floor Pavements in Pompeii Illustrate Surveying Technology

Pompeii continues to reveal details of ancient Roman life

by Kiona N. Smith, 12/7/2019

Decorative pavements in the floor of a recently unearthed Roman house in Pompeii offer a glimpse into the life and work of an ancient land surveyor. The pavements depict a stylized drawing of an ancient surveyor's tool called a groma, along with a diagram of a surveying technique and the plan of a construction project in Pompeii. So far, they're the only original Roman illustrations of the tools and techniques the Romans used to help build an empire and its infrastructure.

The land surveyor's house

Only a few metal fragments of a Roman groma exist today (also recovered from Pompeii), and archaeologists have found only a few images carved into surveyors' tombstones. Otherwise, we know the tool only from descriptions in medieval versions of ancient Roman surveying manuals.

The newly unearthed pavements at Pompeii suggest that those medieval copies were pretty close to the original ancient texts. An image on the floor of the entrance hall is nearly identical to illustrations in medieval copies of Roman texts, attributed to Roman surveyor Hygius and famed architect Vitruvius.

Colored tiles laid into the crushed terracotta pavement depict a circle with a square drawn inside. Lines divide the square into eight equal sections. In Hygius' and Vitruvius' texts, the image illustrates how to orient a building to one of the cardinal directions. On the floor of the house, the image shows how the house is oriented in relation to the four cardinal directions: one of the lines points along the length of the house, which faces northeast. Meanwhile, the corners of the square point north, south, east, and west.

The image would have immediately told Roman visitors who owned the house and where he had earned the money to build it. By modern standards, that's an odd choice of welcome mat, but wealthy Romans often decorated the floors and walls of their homes with images of their professions. That's why archaeologists think the house may once have belonged to a land surveyor.

Tool of the trade

In a passage connecting the central atrium of the house to the garden, archaeologists found two more decorative images worked into the pavement. One seems to be the stylized image of a groma. Ancient Roman land surveyors and architects would have used a groma to divide farmland into carefully measured parcels called centuriations, to plan developments in cities like Rome and Pompeii, and to lay out the courses of aqueducts and roads.

For some reason, Hygius and Vitrivius didn't include illustrations of a groma in their texts, so modern scholars have to rely on their descriptions and on fragments of a real groma found at Pompeii. The instrument consisted of a set of crossed arms balanced at the end of a horizontal pole so they could spin freely around the center. Four weighted plumb lines hung from the ends of the arms. A Roman land surveyor would line up two of the plumb lines on a distant point and then use the four arms of the groma to calculate an angle in relation to that line.

That seems to be what's depicted in the pavement: a cross in a circle, at the top of a long straight line. "The artist had the problem of representing a three-dimensional object on a flat surface and with a relatively crude means of expression but succeeded in showing the fundamental fact," wrote Massimo Osanna, director of the Pompeii archaeological site, and his colleagues in a recent pre-print paper. The rudimentary image might not scream "groma!" on its own, but in the context of other images related to surveying, it seems likely.

A person of unconventional taste

On the other side of the passage, an even more enigmatic design decorates the pavement: a set of four parallel lines, bracketed on two sides by an L-shape. According to Osanna and his colleagues, it's a 1:300 scale schematic of an insulae, or apartment block, constructed in Pompeii shortly before Vesuvius buried the city in ash and pumice. The L-shape represents the intersection of three of Pompeii's most important roads: the Via Stabiana, the Via del'Abbondanza, and the Via Nola. The two lines of the L-shape seem to be Nola and Abbondanza, while the central axis of the house itself represents the Via Stabiana.

It's tempting to draw the obvious conclusions: the owner of this house was a surveyor or architect in the final days of Pompeii, and he helped plan a major insulae development, which he was so proud of that he had his floor paved with the blueprint. But so far that's only speculation.

What we can say, though, is that the owner of the house had slightly unconventional taste. The pavement would have been a slightly unusual decorating choice, even for Romans. This kind of crushed terracotta pavement was usually decorated with simple, repeating geometric patterns. In this case, except for the surveying illustrations, the rest of the paved floor is blank.

Two other rooms contain a pair of mosaics portraying the mythical hunter Orion and his transformation into a constellation. The mosaics were striking enough to earn the house the nickname "House of Orion," and they're the only mosaic versions of the myth archaeologists have found so far.

But even the elaborate mosaics may be a subtle nod to the homeowner's profession: because surveyors often needed to align buildings with the rising or setting Sun, astronomy would have been an important part of a surveyor's knowledge. Even the Romans had a problem with bringing their work home.

Floor Pavements in Pompeii Illustrate Surveying Technology appears courtesy of Ars Technica which is available in original format at:
https://arstechnica.com/science/2019/12/floor-pavements-in-pompeii-illustrate-surveying-technology//

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Maryland Geological Survey to Begin New Study of Mason-Dixon Line Markers

by Sherry Greenfield, 2/2/2020

The Maryland Geological Survey will begin a new survey of the monuments and markers placed along the Mason-Dixon Line.

This is the first complete survey in 40 years on the 223 monuments along the 200-mile Maryland and Pennsylvania border. The last survey was completed in 1980.

"We're suppose to survey the property of the Mason-Dixon Line," Richard Ortt, director of the Maryland Geological Survey, said. "We're at that time again."

The Mason-Dixon Line was established based on a survey done between 1763 and 1767.

The Maryland Geological Survey, a division of the Maryland Department of Natural Resources, will lead the professional surveying societies of Maryland and Pennsylvania.

The geological survey is working with the Commonwealth of Pennsylvania, the Maryland Historical Society, the Maryland Society of Surveyors and the Pennsylvania Society of Land Surveyors, a DNR news release states.

Fieldwork will be conducted by the professional societies at no cost.

The surveyors will document and photograph what remains of the monuments to create a thorough collection, with the intent of entering the markers into the National Registry of Historic Places, the news release states.

Ortt said they do expect some stones to be missing or buried along the 200-mile border.

"We know that," he said. "If a stone is not there, we will document that."

Stone markers were originally placed every mile, with cross-stones placed every five miles.

Ortt said they already know where a marker should be located.

The survey project is slated to start in February, and continue through Aug. 2021.

DNR is asking property owners along the Mason-Dixon Line to allow surveyors access. All surveyors will have identification and documentation issued from DNR.

Ortt said they want to hear from people who have stories, information or documents about the different stones and monuments.

"Sometimes there are good stories related to the monuments," he said. "If those stories are out there, we'd love you to get in touch."

Ortt suggested that people share their stories with surveyors when they see them.

Maryland Geological Survey to Begin New Study of Mason-Dixon Line Markers appears courtesy of Herald-Mail Media of Hagerstown, Maryland.

State Technical College – Employer's Showcase; A Special Report

by Ray Riggs, Survey Vice-President – Florabama Geospatial Solutions

The July 2019 board meeting of the Missouri Society of Professional Surveyors (MSPS) was attended by guests from State Technical College (STC), in Linn, Mo. Joe Paiva, Aaron Kliethermes and Cindy Cox, staff and instructors from STC, presented the current status and future goals for the surveying program at STC. These goals included adding an additional two hours of surveying classes and the possibility of offering a 2-year program on surveying at STC.

Following this presentation, a motion was unanimously approved to "support the program at STC by committing to collaboration and developing a marketing plan to attract more students for a future program at the college."

I listened to this presentation and participated (somewhat half-heartedly, I must confess) in the discussion that followed. When the motion was made, my "yea" was disinterested at best and apathetic at worst.

But recently, I had reason to be reminded of this quote by the late British philosopher, Arnold J. Toynbee: "Apathy can be overcome by enthusiasm."

In October 2019, I participated in STC's first "Employer's Showcase." Florabama Geospatial Solutions was one of ten employers presenting to students in the Civil Engineering Technology program, Drafting and Design Engineering program, and the Heavy Equipment Operators program. Each potential employer was allotted a 30-minute slot, which included the time for setting up/taking down visual aids (power point, videos, etc.) The event was held in the conference hall of STC's Vehicle and Power Center. A laptop linked to the PA system and three "big screens", was provided for audio/visual support. The spacious conference hall was arranged perfectly to accommodate the 100+ students that attended.

A networking social was planned in the evening to allow the potential employers to interact with STC students and staff. This event was held at the "Eagle's Nest"-a relaxed informal venue, adjacent to the STC President's residence.

To say I was "pleasantly surprised" by this entire experience at STC would be a gross understatement. I have driven by State Tech many times, worked on a project in Linn, and even stayed in the hotel near the Campus - But I was not prepared for the student and staff quality, the top-notch facilities, and the total aura of professionalism that I experienced at STC.

My interaction and correspondence with State Technical College staff - before, during, and after my presentation - was forthright, prompt, and informative. Scott Peters and Ashley Anderson assisted in getting the presenters set up, kept the program moving, and on schedule. A room was provided for the presenters before and after their timeslot; for last minute preparation, and office/computer work if necessary. It was also a great opportunity to meet the other employers and "talk shop".

A tour of the facilities was planned during the afternoon, for those who wished to get better acquainted with the campus and better understand what STC had to offer. This tour was definitely a highlight for me. Shannon Grus, Vice-President of Advancement, was our tour guide and did a fantastic job! My impression of a "drafting/auto mechanic/auto body/welding" college was completely blown away. STC offers much, much more. After the tour it was no surprise to me when Shannon informed us that their enrollment increased 16% in 2018-2019 and 17% in 2019-2020 and the enrollment has increased more in the past 3 years than it had in the previous 19 years. Shannon said most of the classes are at or near capacity, and major facility expansions are planned campus-wide to accommodate more students.

It was difficult the judge the student's response to my presentation. It seemed my attempts at humor fell flat and my punch lines were just soft jabs. I soon realized however, that the formality of the convention hall was not the best venue to indicate their interest. It was in the informal setting at the Eagle's Nest, I found that I had piqued the interest of several of the students. Many of the young men and women expressed interest in a career in land surveying and/or drafting (or were just curious about some of the pictures from my presentation!) I found the students to be extremely courteous, engaging, and genuinely friendly. As with the facility tour, interacting with the students was a highlight of my STC visit.

Since my visit to State Technical College, I am firmly convinced of its value to the workforce of Missouri and more specifically - to the profession of land surveying. STC is a first-rate institution and deserves all the consideration and support that we, as Professional Land Surveyors, can give.

Heartfelt appreciation to:

Dr. Shawn Strong - President, State Technical College
Ashley Anderson, Advancement Coordinator
Scott Peters, Grants & Project Specialist – Advancement and Career Services
Cindy Cox, Director/Instructor - Civil Engineering Technology and Special Projects
Shannon Grus, Vice-President of Advancement
Shannon Voss, Department Chair/Instructor – Civil Engineering Technology

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Historical Land Survey Panels on View at UAM College of Forestry

1/13/2020

The past year marked the 200th anniversary of the establishment of Arkansas as a United States territory.

Before it could become a territory, there was a need for an actual land survey.

The United States had bought the Louisiana Purchase from the French in 1803 for $15 million. The first official land surveys of the Louisiana Purchase began in Arkansas in 1815 near the mouth of the St. Francis and Arkansas rivers.

Thus, the connection with the UAM College of Forestry, Agriculture and Natural Resources began. The year 2020 marks the return of nine panels outlining the historical significance of the Louisiana Purchase. The panels arrived at the start of the school year.

The panels are being welcomed back after first being on display in the fall of 2015. UAM Associate Professor John Dennis said the panels are relevant to the College of Forestry, Agriculture and Natural Resources because of their tie-in to the college's academic programs, and in particular the land surveying major.

There are nine 5-foot by 4-foot panels hanging in the foyer of the first floor the George Clippert Forest Resource Annex. The panels belong to the Arkansas Department of Heritage in Little Rock and are now on loan to the College of Forestry Agriculture and Natural Resources.

Dennis said he's glad to have them back to help illustrate the significance of the history and the natural resources of the Louisiana Purchase to Arkansas.

The display is open to the public during business hours.

UAM is home to the state's only four-year baccalaureate program in land surveying. The panels are a short history lesson detailing the Louisiana Purchase survey, which had its beginnings in the delta of eastern Arkansas.

Initial measurements took place near the mouth of the St. Francis River and the confluence of the Arkansas and Mississippi Rivers.

Historical Land Survey Panels on View at UAM College of Forestry appears courtesy of **The Magnolia Reporter** of Magnolia, Arkansas.

2020 Spring Workshop • April 30 – May 2, 2020
Lodge of the Four Season • Lake Ozark, MO

St. Louis Geospatial Leaders Launch GeoFutures To Shape Growing Industry

by Corinne Ruff, 10/10/2019

Business, academic and civic leaders are coming together to plot the future of the geospatial industry in St. Louis.

A new initiative announced Thursday — GeoFutures — is intended to provide a framework for how to drive investment in location intelligence technology and the workforce to support it.

"We want St. Louis to be seen as the international hub of innovation and expertise in the geospatial industry, period," said Patty Hagen, executive director of startup incubator T-Rex.

Hagen is one of nearly 30 members of an advisory committee that will meet monthly to oversee the initiative. Other members include executives from major corporations like Enterprise and Boeing, as well as academic researchers from St. Louis University, among others.

Over the past few years, many of these organizations have built up their own geospatial programs. But with so many different applications of location intelligence technology, Hagen said it's important to bring all these perspectives into one room.

"We'll create new partnerships that we haven't even thought about by connecting in a better way with one another," she said. "And we'll be able to get to this vision that will really serve our community in an inclusive way moving forward, because that's a really important aspect."

Andy Dearing, president of Spatial STL Advisors, is leading the project. He's the former CEO of geospatial software company Boundless Spatial.

"Everybody is putting together some sort of a plan, and there is talent that's sitting around there," he said. "It's just putting that whole plan together and making sure that, one, people understand how that exists today, and then also where the industry is going in the future with more sensors, more information."

The National Geospatial-Intelligence Agency is preparing to break ground on its new western headquarters in north St. Louis. GeoFutures will also receive guidance from former NGA directors Robert Cardillo and Tish Long.

Otis Williams, executive director of the St. Louis Development Corporation, said that what started as a campaign to keep the NGA in the region now requires a more strategic plan to grow jobs and new businesses.

Ever since the National Geospatial-Intelligence Agency announced its new western headquarters (pictured in a drawing above), many organizations have created their own geospatial plans. A new initiative aims to bring them all together.

He said the geospatial industry currently supports more than 26,000 jobs across the St. Louis region and has an economic impact of nearly $5 billion — though he sees opportunity for more.

"We don't know yet what the total impact of the transformation will be, but it is one of those things that we know already serves as a significant attraction for new businesses and startups," Williams said.

This week, two geospatial firms announced plans to build offices in St. Louis: Maxar and T-Kartor.

Members of the GeoFutures advisory committee are expected to release their plan in March, ahead of St. Louis University's Geo-Resolution conference in St. Louis.

They will also share the information at the largest geospatial industry conference later in the year, in Tampa. St. Louis has been selected to host that conference — the GEOINT Symposium — in 2023 and 2025.

St. Louis Geospatial Leaders Launch GeoFutures To Shape Growing Industry appears courtesy of **St. Louis Public Radio**, available in original format at: https://news.stlpublicradio.org/post/st-louis-geospatial-leaders-launch-geofutures-shape-growing-industry#stream/0

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The Diminishing Surveyor

by Daniel L. Govero, PLS 1778 (One of the 'Old Guys')

Every year we are losing surveyors due to age, retirement or illness. There are very few young people interested in pursuing the surveying profession. Why? Some say it is the educational requirements, some say it is the length of time and some say it's because the test is too hard. I don't believe any of these excuses.

The problem is an Identity Issue. People don't know who we are and what we do and how many people depend on our work, and that it is a noble profession.

Even the engineers and architects that depend on our work don't understand this. Colleges have eliminated surveying classes in their curriculum.

How did we get into this situation?

When I started there were three people on a team – one learned, and two learning. The education requirements were high school diploma and eight years' experience. When electronic measuring (EDM) came into play, we went to a two-man crew – one learned and one learning. With the introduction of the Robotic Total Stations and GPS we are down to a one-man crew – one learned, and no learning. Some even have a one-man office and field with no one be trained.

How do we change this?

Do we change the education and training time from LSIT to LS. I believe we are not protecting the public if we reduce training time or education requirements, and I do not believe that this is the issue. The test has not changed for over 20 years, the pass-fail rate is the same. The problem is no one is taking the test. Again, another Identity Issue.

Have you ever gone to a school and talked about the Surveying? I have and it's amazing how many questions there are and how many students are interested in finding out more.

We must get the word out to the Schools that we are an equitable profession. We recently sent a letter to school counselors titled "Professional Land Surveyors – Who We Are" which also told of the requirements needed to become a land surveyor, and asked them to pass this information along to their students. We have hired college interns who work during Spring, Summer and Winter breaks. We have also hired young people and are training them in Office and Field techniques. We run two-man crews and we have one new hire who is currently taking surveying courses through the State Technical College of Missouri, located in Linn, MO. We pay for educational reimbursement. We have also contacted the Missouri Job Center and one of our new hires qualified for the On-the-Job Training program. The OJT Program provides up to 50% reimbursement of up to six months of wages of workers hired through this program (see jobs.mo.gov or contact your closest Missouri Job Center office). This allows the person to find out if they are truly interested in the profession, and helps the employer cover the cost of training a new employee.

Training is very important. You don't learn how to research the records, find and recognize monuments and interpret the intent of conveyance in a classroom. This knowledge and much more is passed down from working and training under Professional Surveyors.

I believe, if our profession is to survive, it is up to us to promote land surveying to the schools through mentoring, career days or whatever else it takes. We must become involved with local organizations and spread the word to the public. We must make ourselves known.

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ARPL Alliance for Responsible Professional Licensing

NEWS RELEASE

2/5/2020
Joe Sangiorgio
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1-202-550-2709

New Survey: Consumers Concerned About Rush to Eliminate Professional Licensing

Clear Support for Rigorous Professional Licensing to Protect the Public Exists

Findings Come as State Legislatures Weigh Weakening or Eliminating Licensing

WASHINGTON, D.C. – The Alliance for Responsible Professional Licensing (ARPL) today announced the results of a national survey that indicated widespread public support for maintaining rigorous professional licensing standards for professions that have a clear impact on public health, safety and welfare. These findings were announced as many state legislatures are considering broad proposals to overhaul or eliminate state licensing requirements in the current legislative session.

Legislation weakening state professional licensing requirements was introduced in the West Virginia legislature earlier this month. Similar legislation is expected to be introduced in other states in the coming weeks and months.

Eliminating licensing has become a top priority of groups such as the conservative American Legislative Exchange Council (ALEC) and the Koch-funded Americans for Prosperity, with model legislative proposals that include the complete elimination of all professional and occupational licensing.

The survey was conducted by Benenson Strategy Group and yielded these key findings:

1

The Alliance for Responsible Professional Licensing (ARPL) promotes a responsible, balanced approach to professional licensing. We aim to educate policymakers and the public on the importance of high standards, rigorous education, and extensive experience within highly complex, technical professions that are relied upon to protect public safety and enhance public trust. For more information, visit www.responsiblelicensing.org.

- **75%** of voters believe that it is important to ensure qualifications for professionals in certain industries. A majority of voters believe that current professional licensing requirements protect the public and should not be reformed.
- **More than 70%** of voters believe that regulating professionals in accounting, engineering, architecture, landscape architecture, and related fields with high impact on public safety and welfare is important.
- **71%** of voters believe professional licensing should be required unless it can be proven that eliminating licensing will not have a negative impact on public health and safety. The public is wary of the alternative approach: requiring licensing only when it is proven necessary for health and safety.
- **67%** of voters believe that consumers are best protected by a system that regulates education, examination and experience standards—all of which are overseen by a professional licensing board.

"An overwhelming, bipartisan majority of the American people understand that professional licensing is rigorous for good reason and they want to keep it that way," **said Skip Braziel, a member of the ARPL, who also serves as Vice President for State Regulatory and Legislative Affairs at the American Institute of CPAs (AICPA)**. "Consumers want to know that the professionals they hire are qualified and as this survey makes clear, voters want to see responsible licensing protected."

"The public recognizes the critical role that licensing and licensing boards play in protecting the public," **said Marta Zaniewski, an ARPL member who also serves as the Assistant Vice President of External Engagement for the National Council of Architectural Registration Boards (NCARB)**. "This is why consumers are understandably wary of the anti-licensing proposals being floated in their state capitals. Licensing boards not only establish qualifications for a profession, but act on the public's behalf to uphold the highest standards for our profession and take action against bad practitioners. This indispensable public protection role will be lost if licensing is eliminated."

You can read the survey summary here.

2

The Alliance for Responsible Professional Licensing (ARPL) promotes a responsible, balanced approach to professional licensing. We aim to educate policymakers and the public on the importance of high standards, rigorous education, and extensive experience within highly complex, technical professions that are relied upon to protect public safety and enhance public trust. For more information, visit www.responsiblelicensing.org.

(continued on next page)

Background:

ARPL is a unique coalition that brings together professional organizations and their licensing boards at a time when there is significant concern over the appropriate level of licensing required by law. The coalition was formed to ensure their voices are heard by policymakers and the public amid the growing debate around licensing. You can learn more about the Alliance and the importance of professional licensing at www.responsiblelicensing.org.

Members of ARPL include the American Institute of Certified Public Accountants (AICPA), American Institute of Architects (AIA), American Society of Civil Engineers (ASCE), the American Society of Landscape Architects (ASLA), the Council of Landscape Architectural Registration Boards (CLARB), National Association of State Boards of Accountancy (NASBA), National Council of Architectural Registration Boards (NCARB), National Society of Professional Engineers (NSPE) and National Council of Examiners for Engineering and Surveying (NCEES).

For more information about the study or to request an interview with an ARPL representative, please contact Joe Sangiorgio at JSangiorgio@craftdc.com or 1-202-550-2709.

3

The Alliance for Responsible Professional Licensing (ARPL) promotes a responsible, balanced approach to professional licensing. We aim to educate policymakers and the public on the importance of high standards, rigorous education, and extensive experience within highly complex, technical professions that are relied upon to protect public safety and enhance public trust. For more information, visit www.responsiblelicensing.org.

No Need to Panic About Wuhan Coronavirus

by Lynelle Phillips, RN MPH

The Wuhan coronavirus has whipped up a media firestorm in recent days, with news sites like CNN tracking the death toll as it has risen (at the time of this writing) from a few dozen to more than 560. And while there is certainly cause for concern — the new respiratory virus only appeared 2 months ago and has already resulted in travel warnings and restrictions both inside and outside China, and the World Health Organization has declared it a global emergency — we must keep a grounded perspective and prioritize public health.

As of yet, confirmed cases in the United States have been limited to cases of international travel connected to Wuhan, China, the virus's origin. CDC also recently confirmed spread from person-toperson in the US between a recent traveler to Wuhan and her spouse. However, we need not panic. If you have not traveled to high-risk areas of China within the past two months, or you do not know anyone who has, you are not at risk of contracting the virus.

It's also important to remember that even those who *have* traveled to China recently are currently at low risk. In a country with a population of almost 1.4 billion, less than thirty thousand have contracted the virus. That's a miniscule fraction of the population, and only a fraction of that number have come down with serious or fatal cases. In contrast, in the United States, influenza (which is preventable with a flu shot) caused an estimated 35.5 million people to get sick, 490,600 to be hospitalized, and 34,200 to die during the 2018-2019 flu season. So as Chinese Americans and expats go about their business, whether visiting a clinic for a routine checkup or shopping in a grocery store, we should not treat them as harbingers of a virus that has little chance of infecting them or anyone else. Profiling is profiling, and it is no more acceptable in this situation than in any other. Instead, get a flu shot — which does not cause the flu, by the way — if you have not already.

Other precautionary measures, such as hand washing and covering our cough can also prevent all manner of viral infections, including influenza, colds and coronavirus. It may seem trivial, but the most significant step anyone can take to protect themselves from the spread of disease (aside from staying up-to-date with vaccines) is to wash your hands. There is a reason that we as medical professionals drill this into peoples' heads: hand-washing works, as covering your coughs and sneezes. If everyone practiced those simple routines, we would effectively thwart the spread of many viral illnesses.

In addition to these precautions, know that a robust and well-prepared public health system is the best population-level defense against the spread of emerging infectious disease outbreaks, such as coronavirus. Public health professionals are the ones that conduct screening, investigate potential cases, follow up high-risk contacts, track disease spread, issue quarantine and isolation orders, and much more. Sadly, as the virus and resulting media attention turn their spotlights on public health, we illuminate a system that is underfunded and neglected. And Missouri's system is in the darkest corner, with one of the most underfunded public health systems in the country. Unfortunately it takes a crisis for this neglect to become glaringly obvious.

Funding for new technologies is vital to sustain a clinical health system that is prepared for new challenges like the Wuhan coronavirus. The University of Missouri's NextGen Precision Health Initiative — which is accelerating disease research with state-of-the-art technology and a collaborative approach — is a great first step. However, we need greater and more reliable funding at both the state and federal levels to bolster the basic public health structures that protect and maintain the public health of Missourians.

NextGen PRECISION HEALTH Initiative

Over the coming weeks, public health workers, epidemiologists, researchers, nurses and doctors all over the world will be working around the clock to contain this virus. When the frenzy finally passes, let us not forget that all those professionals will still be hard at work, diligently laboring to anticipate and prevent the next public health crisis. Let's reward them not only with praise, but with the funding they need to courageously combat diseases and save lives.

Claims to Land and the Board of Revision

by Steven E. Welble, PLS, 1/20/2020

The work of the first Board of Commissioners for the adjustment of land titles in the Territory of Louisiana may as well have been a trial run, given the numerous changes throughout the process and the ultimate failure to complete the task. From the outset the United States government was suspicious of attempts to fraudulently acquire land. As a result, Congress passed legislation consistent with what they believed the Spanish regulations to have been, honoring the claims of bona fide settlers, while trying to exclude the fraudulent claims. The plan seemed to be one of strict application in the beginning with the option to revise the legislation as more information became available about the merit of the claims (*Territorial Papers*, Vol. 14, pg 79). Thus the Board of Commissioners began with insufficient instructions, attempted to identify and work through the deficiencies, were challenged by legislative changes throughout the process and when they believed they were nearly done, were presented with new rules that would require a revision of nearly all of the claims examined to that point.

In an effort to incorporate all of the lessons learned and to address all of the concerns identified up to that time, Congress passed the Act of March 3, 1807, chapter 36, *An Act respecting claims to land in the territories of Orleans and Louisiana* (U. S. Statutes at Large, Vol. 2, pg 440).

The first section of the act repealed that part of the first section of the Act of March 2, 1805, chapter 26 (U. S. Statutes at Large, Vol. 2, pg 324), that required the claimant to be the head of a family or over the age of twenty-one years.

The second section of the act provided for the confirmation of tracts of land not exceeding two thousand (2000) acres (equal to 2351 arpents), that had been possessed for ten consecutive years prior to December 20, 1803 by a person or persons actually resident in the territory of Louisiana and still in possession of the tract of land. Lead mines and salt springs could not be confirmed under this section of the act.

The fourth section of the act gave the Board of Commissioners full powers to decide upon claims to land not exceeding one league square (equal to 7056 arpents or 6002.5 acres) according to the laws and established usages and customs of the French and Spanish governments. The claimant had to have been an inhabitant of Louisiana on December 20, 1803 and the tract could not contain a lead mine or a salt spring.

The fifth section of the act extended to July 1, 1808 the time for filing written notice and evidence of a claim to land with the recorder of land titles.

The sixth section of the act provided that a transcript of confirmations was to be transmitted to the Secretary of the Treasury and the surveyor-general. The Board of Commissioners was to deliver to each claimant a certificate stating the circumstances of the case with notice that the claimant is entitled to a patent for the tract of land designated in the certificate. The claimant was then to file the certificate with the recorder of land titles within twelve months. The recorder of land titles would then issue another certificate, which was to be submitted to the Secretary of the Treasury. A patent would then be issued in the same manner as for the public lands.

The eighth section of the act required the commissioners to prepare a report of the claims that were not confirmed by the fourth section of the act. The report would be submitted to Congress for their final determination.

James L. Donaldson, who had abandoned the office of Recorder of Land Titles for the Territory of Louisiana, was replaced by Frederick Bates, who was commissioned by President Thomas Jefferson on February 4, 1807 (Marshall, Vol. 1, pg 91). Mr. Bates was also commissioned as the Secretary of the Territory of Louisiana on the same date (*Territorial Papers*, Vol. 14, pg 117). He had previously served as receiver of public monies, a land commissioner and a judge in various courts in the Territory of Michigan (Marshall, Vol. 1, pg 9). Meriwether Lewis was commissioned by President Thomas Jefferson as Governor of the Territory of Louisiana on March 3, 1807, but he did not begin to function in that capacity until March 8, 1808 (*Territorial Papers*, Vol. 14, pg 107, 171). Consequently, Frederick Bates, as Secretary of the Territory, also performed the functions of the governor until the arrival of Lewis.

Frederick Bates arrived at St. Louis on April 1, 1807 and soon thereafter joined with Judge John B. C. Lucas and

Clement B. Penrose to resume the work of the Board of Commissioners as a Board of Revision (Marshall, Vol. 1, pg 102, 134). The Secretary of the Treasury, Albert Gallatin, sent a letter, dated April 2, 1807, providing updated instructions for their proceedings as a result of changes enacted by the latest Act of Congress (Marshall, Vol. 1, pg 93).

All of the decisions of the former Board of Commissioners had to be reexamined under the new provisions of the legislation. The instructions that Secretary Gallatin had previously sent under date of September 8, 1806 were still applicable, unless they conflicted with the new legislation, in which case the new legislation would take precedence. Restrictions were still in force as to claims on which the commissioners were not authorized to decide.

Certificates issued for approved claims were to be numbered progressively in the order in which they were issued, beginning with No. 1. Each certificate was to specify the name(s) of the original claimant, the present owner, the nature of the claim (i.e., concession, order of survey, settlement right, etc.) and the location of the tract of land. If a survey had already been executed, it was to be appropriately referenced. If a survey had not yet been performed, precise directions were to be given as to where and how the tract was to be surveyed. The area was to be stated in either acres or arpents. The Clerk of the Board was to keep a register of the certificates that were issued and he was to send to the Secretary of the Treasury a list of certificates issued each month. The Recorder of Land Titles was also to keep a separate register for the patent certificates to be issued by him and he was to send a monthly report to the Secretary of the Treasury. The patent certificate was to include the description from the survey and it had to specify by whom the survey was performed.

In a letter, dated May 30, 1807, Frederick Bates informed Mr. Gallatin, that he had received the instructions and that the Board of Revision was then meeting every third day to receive testimony in support of land claims (Marshall, Vol. 1, pg 134).

The Commissioners of the Board of Revision passed a resolution on June 13, 1807, stating their plan to make a circuit of the Territory in order to receive testimony from the land claimants in the distant settlements (Marshall, Vol. 1, pg 158; *Territorial Papers*, Vol. 14, pg 130, 142, 182). They planned to visit St. Charles in August 1807, Sainte Genevieve in November 1807, Cape Girardeau and New Madrid in March 1808 and Camp Esperance in April 1808. During the intervening periods of time, they planned to continue their sessions in St. Louis.

Frederick Bates reported to Secretary Gallatin on February 9, 1808 that the Board of Revision had only received testimony and had not yet made any decisions. They first wanted to settle all the principles upon which their decisions were to be made to avoid the problems encountered by the first Board of Commissioners (Marshall, Vol. 1, pg 280, 300). In addition, the specifications for confirmation in the various acts of Congress were such that some claims were considered as having higher merit than others. It was, therefore, imperative to ensure that those of higher merit were given the senior right where a conflict may exist. This could only be accomplished by delaying their decisions until after all testimony had been received (*Territorial Papers*, Vol. 14, pg 366).

The trips to St. Charles and Sainte Genevieve were completed as planned in 1807 (Marshall, Vol. 1, pg 283). The travel plans for 1808, however, were modified due to the inconvenience of traveling at such an early time of the year. The Commissioners of the Board of Revision decided to delay until May 1808 and to send only one member of the Board to receive testimony instead of all three. Frederick Bates, the Recorder of land titles, was selected to make the trip. Since he could not read or understand French or Spanish, Marie Philippe LeDuc, the translator, was to accompany him. Judge Lucas and Clement Penrose were to remain in St. Louis and continue the sessions of the Board there (*Territorial Papers*, Vol. 14, pg 182).

Frederick Bates, accompanied by Marie Philippe LeDuc, began his circuit of the southern settlements in late May 1808 (*Territorial Papers*, Vol. 14, pg 190). He reported to Secretary Gallatin on July 22, 1808 from the Village of Arkansas that he had visited all of the settlements between there and Cape Girardeau, collecting evidence and testimony (Marshall, Vol. 2, pg 7). On August 15, 1808 he made report to the Board of Commissioners and submitted the records for their consideration (Marshall, Vol. 2, pg 11). It was later reported that he had collected testimony on 1121 claims (*Territorial Papers*, Vol. 14, pg 366).

The Board of Revision posted notice on August 24, 1808 that they intended to meet every day, except Sunday,

(continued on next page)

Claims to Land and the Board of Revision *(continued)*

until the first of November 1808 to receive testimony and continue the business of the Board (*Territorial Papers*, Vol. 14, pg 222). Finding, however, that the business could not be completed by that time, they extended the date to December 1, 1808 and subsequently pushed the date back to January and then March 1809 to give claimants every opportunity to present testimony in support of their claims (*Territorial Papers*, Vol. 14, pg 231, 241, 249, 366). In a letter, dated November 26, 1808, the Board notified Secretary Gallatin that with the amount of work yet to be done they would not be able to complete a report for the current Session of Congress. They also reminded him that provision for their compensation would end on January 1, 1809 (Marshall, Vol. 2, pg 42).

On February 1, 1810 the Commissioners of the Board of Revision reported to Secretary Gallatin that they had received 3056 claims for land and that they had begun rendering decisions on December 8, 1808. Of the 3056 claims, 2699 claims had supporting testimony, while the remaining 357 claims had none. Only 8 claims were determined to have complete titles. Claims that were confirmed by the Board, but which had not yet been surveyed, were not issued a certificate until a survey could be completed. They reported that they had so far finally decided on 638 claims. Certificates had been issued on 323 claims, surveys were ordered for 167 claims and 139 claims had been rejected. The Board noted that there was still much work to be done and they again reminded the Secretary that compensation was still an issue (*Territorial Papers*, Vol. 14, pg 366).

Secretary Gallatin reported in a letter, dated May 5, 1810, that Congress had failed to pass legislation providing for continued compensation for the commissioners, the clerk of the board and the translator. He urged them, however, not to be discouraged by a lack of compensation, but to continue with all haste so that their final report could be submitted to the next session of Congress (*Territorial Papers*, Vol. 14, pg 404).

In a letter, dated November 7, 1810, Thomas Riddick, the Clerk of the Board of Revision, reported to Secretary Gallatin that the Board had so far finally decided on 1692 claims. Certificates had been issued on 524 claims, surveys were ordered for 423 claims and 745 claims had been rejected. He also reminded the Secretary that he continued to labor without compensation (*Territorial Papers*, Vol. 14, pg 421).

Congress finally made provision for compensation in passing the Act of March 3, 1811, chapter 46, *An Act providing for the final adjustment of claims to lands, and for the sale of the public lands in the territories of Orleans and Louisiana* (U.S. Statutes at Large, Vol. 2, pg 662). Each commissioner and the clerk of the Board were allowed 50 cents for each duly filed claim that remained undecided on July 1, 1809 and on which a decision was finally made, whether confirmed or rejected. A further compensation of 500 dollars was to be paid after all of the work was completed and the transcripts and reports had been submitted to the Secretary of the Treasury. The translator was allowed 600 dollars per year, not to exceed a term of 18 months.

Secretary Gallatin informed the Commissioners of the Board of Revision in a letter, dated April 24, 1811, that compensation for the claims that were ultimately rejected could not be paid until their final report was submitted. Compensation for the claims that were confirmed and on which certificates had been issued, however, could be paid when the report of certificates issued each month was submitted as previously directed (Marshall, Vol. 2, pg 172).

The plan for compensation was not well received by the commissioners, the clerk or the translator and there were rumblings of resignation that threatened to bring a halt to the proceedings (Marshall, Vol. 2, pg 178, 180). Nevertheless, they labored on and the Clerk of the Board reported to Secretary Gallatin on January 20, 1812 that the business of the Board of Revision had been completed (Marshall, Vol. 2, pg 214). Frederick Bates reported on January 27, 1812 that the final report of the Board of Revision had been entrusted to Clement Penrose for delivery to the Secretary of the Treasury (Marshall, Vol. 2, pg 216).

The Board of Revision issued 1342 confirmation certificates, one of which was determined to be a duplicate and was declared void. The final report identified about 2055 claims that were not approved according to the provisions of the existing legislation (ASP:PL Vol. 2, pg 388). At the time that he delivered the final report, Clement Penrose offered a classification

of the claims that were not approved and included his personal recommendations. He acknowledged that there were claims that lacked merit and should never be confirmed, but that many claims, although not meeting the requirements of the existing legislation, did have merit and in all justice should be approved by some future legislation (ASP:PL Vol. 2, pg 377).

SOURCES

Marshall, Thomas Maitland, *The Life and Papers of Frederick Bates*, Missouri Historical Society, 1926

American State Papers: Public Lands (ASP:PL)

The Territorial Papers of the United States, compiled by Clarence Edwin Carter, 1948

U. S. Statutes at Large

NGS News & Events

NGS Coordinates Federal Planning for 2022 Spatial Reference Modernization

Friday, January 24, 2020

NGS Director Juliana Blackwell and other senior NGS staff participated in the "NSRS Modernization Update and Federal Coordination Planning" meeting. Key federal stakeholders were in attendance, including the Office for Coastal Management's Geospatial Information Officer Tony LaVoi. Mr. LaVoi discussed the present status and potential impact of the Geospatial Data Act (GDA) of 2018, which was enacted last year. The GDA provides guidance on how all government agencies will perform their geospatial activities. An NGS representative then provided an update on the status of National Spatial Reference System (NSRS) Modernization efforts and implementation goals for 2022. Subsequent discussions included the results of the latest socioeconomic study on the benefits of the NGS Absolute Gravity Program.

NGS, National Geospatial-Intelligence Agency Discuss Strategic Partnerships

Friday, January 17, 2020

NGS Deputy Director Brad Kearse and senior staff recently visited the National Geospatial-Intelligence Agency (NGA) in St. Louis, Missouri, to discuss strategic partnerships and research opportunities in the field of geodesy. NGS and NGA have a long standing history of collaboration in the field of geodesy. The purpose of this meeting was to reinvigorate collaborative projects that will occur over the next few years. In particular, the meeting focused on gravity research, data sharing, international collaboration, and developing a workforce for the future. This collaborative effort will continue with regularly scheduled monthly teleconferences to better integrate staff between the two agencies.

NGS, NASA Offer New Process for Height Measurement

Friday, January 10, 2020

At the 2019 American Geophysical Union Fall Meeting in San Francisco, California, NGS and NASA presented a poster titled "High-Resolution Temporal Geoid Change Modeling in Alaska for a New Geopotential Datum."" The poster showcases a new process for calculating dynamic geoid models when satellite-based gravity data is insufficient. Ice mass loss from mountain glaciers in Alaska deforms the geoid model of the Earth's surface at scales too small to be seen by the Gravity Recovery and Climate Experiment (GRACE) satellites - the primary source of geoid rates. Poster authors used special NASA Goddard Space Flight Center GRACE mass trend solutions to demonstrate the existence and effects of these concentrated errors of omission, which can approach +/- 1 millimeter per year. To mitigate these errors, the authors combined a GRACE-based dynamic geoid model with a high-resolution model of ice mass loss based on airborne and satellite altimetry. This enhanced model will be validated observationally as part of future Geoid Monitoring Service (GeMS) geodetic campaigns.

(continued on page 26)

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NGS Provides Training and Software to Support Geodetic Survey Projects

Friday, December 20, 2019

NGS provided Online Positioning User Service (OPUS) Projects Manager's Training at the NGS Testing and Training Center in Woodford, Virginia. OPUS Projects is an NGS-developed software that gives users web-based access to easy-to-use management and processing tools for geodetic survey projects that involve multiple personnel at multiple locations and span days or weeks of data collection. Attendees included staff from the Virginia Department of Transportation, the Papio-Missouri River Natural Resources District, the Academy of Natural Sciences of Drexel University, and private sector employees. Since February 2014 more than 1,200 different entities and 3,200 individuals have received OPUS Projects technical training through nearly 200 training sessions.

NOS Leadership Tours NGS Facilities

Friday, December 13, 2019

NOS leadership toured the NGS Testing and Training Center in Woodford, Virginia, and the NGS Field Operations Branch facility in Norfolk, Virginia, to assess the facilities' contributions to the NOS mission and their preparedness for the future. NGS Director Juliana Blackwell and NGS Deputy Director Brad Kearse traveled with NOS Acting Assistant Administrator Nicole LeBoeuf and other senior management staff from NOS's Office of Management and Budget, Office of Coast Survey, and the Center for Operational Oceanographic Products and Services. In Woodford, NOS leadership were given an overview of the Center's mission, and saw demonstrations of the Center's capabilities, including GPS antenna calibration, unmanned aerial system testing, and absolute GPS antenna calibration with a robotic arm. In Norfolk, staff highlighted their support of the Vertical Datum Transformation, Gravity for the Redefinition of the Vertical Datum, Foundation CORS, and coastal mapping projects, many of which are done in partnership with other NOS and NOAA agencies.

NGS Represents United States at 2019 SIRGAS Symposium in Brazil

Friday, December 6, 2019

NGS participated in and represented the United States at the 2019 Sistema de Referencia Geocentrico para las Americas Symposium (SIRGAS) in Rio de Janeiro, Brazil. NGS's Pacific Southwest Regional Geodetic Advisor and U.S. representative to SIRGAS presented "U.S. Country Briefing: Modernization of

the United States National Spatial Reference System. NGS's Chief Geodesist discussed "Interactions between UN-GGIM-Americas and SIRGAS. SIRGAS is the positioning reference system for Latin America, providing longitude, latitude, and vertical heights. Through interagency collaborations, the SIRGAS symposium helps to align scientific, political, and civil needs for endeavors founded on geospatial science that observe and measure physical changes in the Earth. Scientists, students, and representatives from 23 countries were present to discuss current issues and share ideas and solutions at this year's symposium.

NGS, Canadian Geodetic Survey Coordinate Modernization of Reference Systems

Friday, November 22, 2019

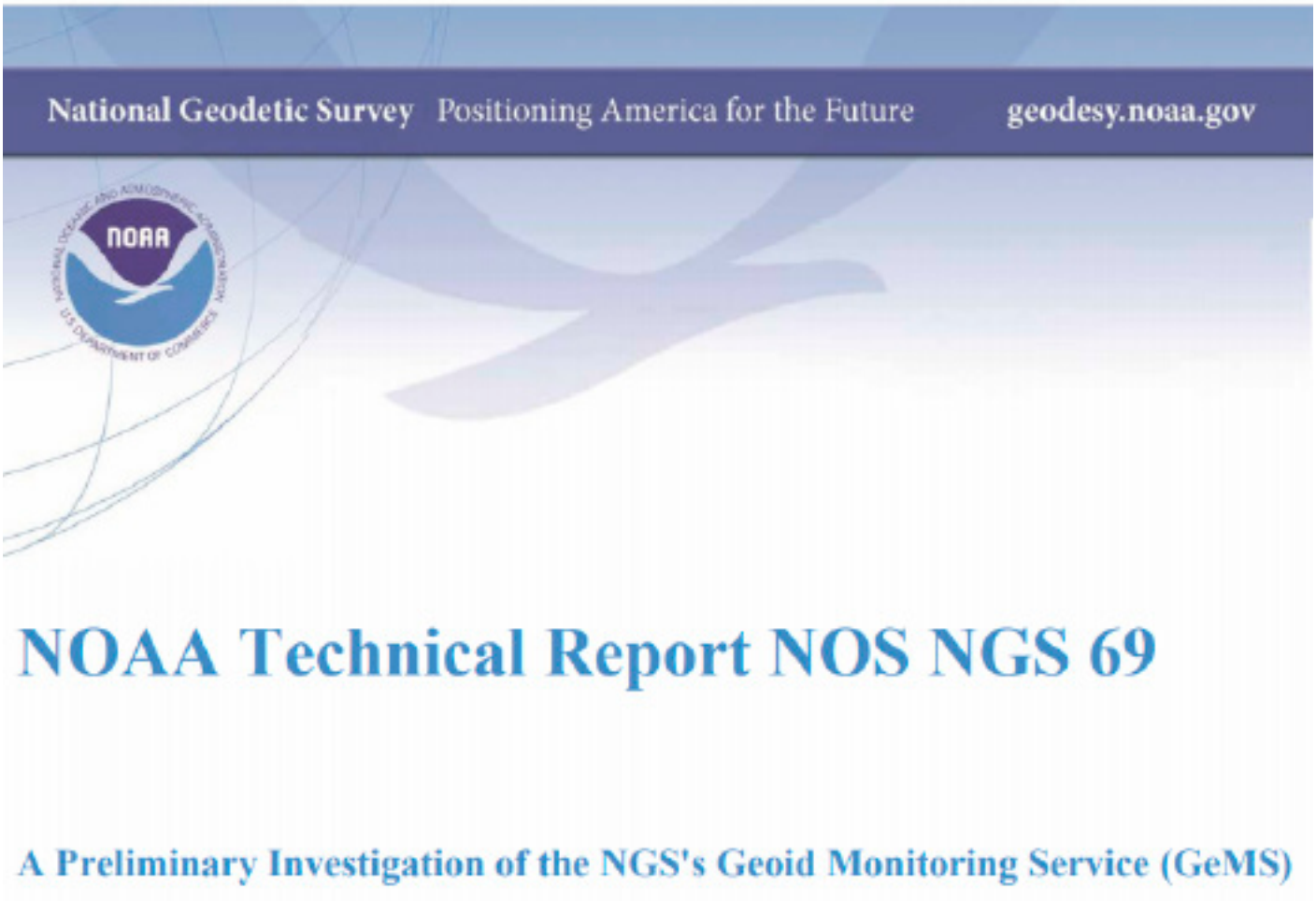
Scientists from NGS and the Canadian Geodetic Survey (CGS) met to discuss the coordinated modernization of the American National Spatial Reference System (NSRS) and the Canadian Spatial Reference System (CSRS) by 2022. This meeting continued the technical collaboration required for both countries to provide consistent geodetic reference frames across North America. Discussions ranged across technical and policy arenas, with a number of decisions reached. NGS and CGS agreed to choose an industry standard grid format for all gridded products and services from both agencies, and further agreed to a variety of naming and nomenclature decisions which should make cross-border work more seamless in the future.

(continued on next page)

NGS Publishes Technical Report on New Geoid Monitoring Service (GeMS)

Friday, November 15, 2019

For more than 200 years, NGS has provided access to the National Spatial Reference System (NSRS), a consistent coordinate system that defines latitude, longitude, height, scale, gravity, and orientation throughout the United States. The datums that define this positioning framework are currently fixed with respect to time. However the Earth is not a static object, and we now have the scientific and observing capabilities to understand many physical changes and incorporate them into a time-dependent, dynamic NSRS that uses a gravity-based vertical reference system to measure heights. NGS has published a new technical report that describes the current state of knowledge and outlines the next steps required to define this time-dependent geopotential datum. Long-term NGS goals regarding time-dependent geopotential datum have been incorporated into a project called the "Geoid Monitoring Service," or GeMS. This report presents a roadmap of options for how NGS could realize a time-dependent geopotential datum.



https://geodesy.noaa.gov/library/pdfs/NOAA_TR_NOS_NGS_0069.pdf

NGS Launches Partnership with Public, Private Sector

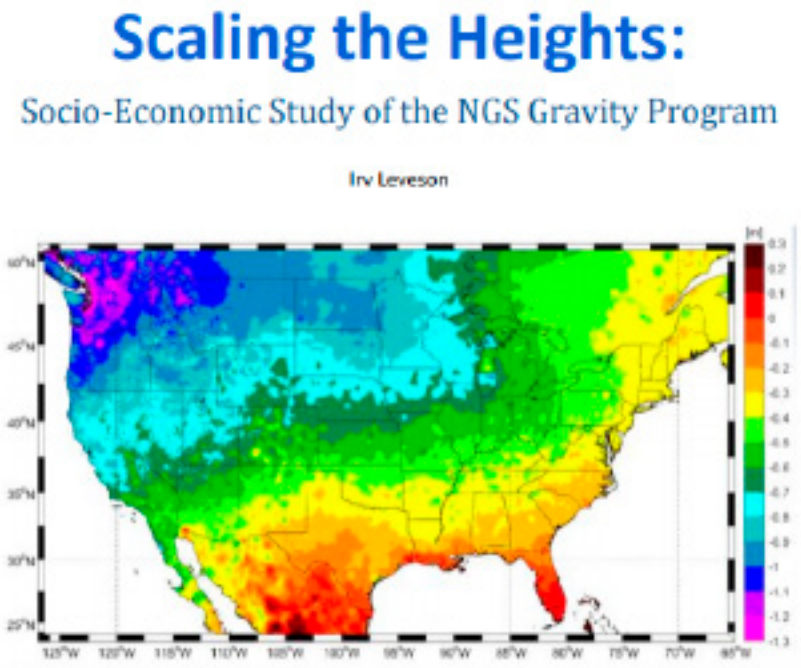
Friday, November 8, 2019

NGS Director Juliana Blackwell and senior staff visited the Ohio State University (OSU) to discuss strategic partnerships and research opportunities in the field of geodesy. The meeting was coordinated by a delegation from the National Geospatial-Intelligence Agency (NGA). All parties are interested in promoting the science of geodesy to prospective science, technology, engineering, and mathematics students. Discussions with the university focused on the development of training for current staff and degree programs in geodesy for new recruits. Discussions also centered on potential research areas and the necessary administrative structure to establish a University Affiliated Research Center at OSU. These discussions and engagements with American universities are a part of an NGS and NGA effort to develop an academic as well as a physical infrastructure for the next generation of geodesists, and a support system for geodetic research into the future.

Study Values NGS Gravity Program at $4.2 to $13.3 Billion over Ten Years

Friday, November 1, 2019

A new study estimates the value of the NGS Gravity Program to be between $4.2 and $13.3 billion over ten years, with a middle scenario of $8.7 billion. The socio-economic study was conducted for NGS by ARCBridge Consulting of Herndon, Virginia. The NGS Gravity Program uses information about the gravity field to provide more accurate elevation data (or "heights") for the United States. The improved heights will result from a new vertical height reference system created from the Gravity Program's GRAV-D Project (Gravity for the Redefinition of the American Vertical Datum), which lets surveyors and scientists employ GPS to determine more precise and accurate elevations than currently possible, in less time and with less effort.



https://www.ngs.noaa.gov/library/pdfs/NGS-Gravity-Program-Socio-Economic-Report.pdf

(continued on next page)

1. From the Federal Register; *Deprecation of the United States (U.S.) Survey Foot.*

SUMMARY:

The National Institute of Standards and Technology (NIST) and the National Geodetic Survey (NGS), National Ocean Service (NOS), National Oceanic and Atmospheric Administration (NOAA), are taking collaborative action to provide national uniformity in the measurement of length. This notice announces a decision to deprecate the use of the "U.S. survey foot" on December 31, 2022. After that date, the "U.S. survey foot" will be superseded by the "foot" (formerly known as the "international foot"), which is already in use throughout the U.S. This notice describes the plan, resources, training, and other activities of NIST and NOAA that will assist those affected by this transition, and invites comments and other information from land surveyors, engineers, Federal, State and local government officials, businesses, and any other member of the public engaged in or affected by surveying and mapping operations.

Background

This action is designed to establish national uniformity in length measurements based on the foot. For more than sixty years, two nearly identical definitions of the foot have been in use in the U.S. for geodetic and land surveys. A Federal Register notice published on July 1, 1959 (24 FR 5348) by the National Bureau of Standards (renamed the National Institute of Standards and Technology in 1988) and the U.S. Coast and Geodetic Survey (reorganized as the National Geodetic Survey under the National Oceanic and Atmospheric Administration in 1970) refined the definition of the yard in terms of the International System of Units (SI), commonly known as the metric system. The 1959 notice was issued after an international agreement among six nations resolved a long-standing difference in the relationship of the U.S. yard to the British yard. The notice reported that there was a slight difference (2 parts per million) between the 1959 definition (i.e., one yard = 0.914 4 meter, exactly) and an 1893 definition (i.e., 1 yard = 3600/3937 meter, or approximately 0.914 401 83 meter).

The 1959 Federal Register notice then adopted a revised value for the foot for use throughout the U.S., and identified it as the "international foot" to show that it corresponded with the foot in use by the United Kingdom and other countries. The notice defined this international foot as 0.304 8 meter (e.g., equal to 0.999 999 8 of the value for the foot officially adopted in 1893). Additionally, to avoid disrupting the surveying practices at the time, the notice established an interim approach that permitted the limited use of the historic 1893 value of the foot exclusively in the field of geodetic surveys. It was identified as the "U.S. survey foot" with the defined value of 0.304 800 61 meter (approximately). The 1959 notice specifically stated that the "U.S. survey foot" should be used "until such a time as it becomes desirable and expedient to readjust the basic geodetic survey networks in the United States, after which the ratio of a yard, equal to 0.914 4 meter, shall apply."

As announced in a Federal Register notice published on March 24, 1977 (42 FR 15943), NOAA officially adopted the meter as the unit for length in the National Spatial Reference System (NSRS). However, U.S. surveying and mapping practitioners continued to use the "U.S. survey foot," including when they employed the NGS-defined State Plane Coordinates System of 1927 and 1983 (SPCS 27 and SPCS 83, respectively). Because the "international foot" is the basis for all other length measurements and calibrations in the U.S., it is no longer necessary to continue to maintain two unit values for the foot.

Consequences for Surveying, Mapping, and Engineering in the United States

Although the use of the "U.S. survey foot" was intended to be an interim measure, its use continues to be prevalent in land surveying and mapping in much of the U.S. Of the 50 U.S. jurisdictions that have legislated SPCS 83 (48 States plus Puerto Rico and Guam), the "U.S. survey foot" has been specified for SPCS 83 in 40 States, either through statute (28 States) or Federal Register notices (12 States). Six States have adopted the "international foot" for SPCS 83, while two States (plus Puerto Rico and Guam) have not formally designated the type of foot to be used. It is important to note that State legislation and Federal Register notices regarding the "U.S. survey foot" are specifically associated with SPCS 83, and therefore are not applicable to the NSRS Modernization in 2022.

It is also important to note that while the difference between the two definitions is 2 parts per million, this small discrepancy accumulates over large distances and can result in significant errors in surveying and civil engineering projects, regardless of the size of the project. For example, when a one-mile distance is surveyed, the difference is approximately 0.01 ft or 0.12 in. However, the impact becomes substantial when longer distance measurements or conversions are made, such as those involving rectangular plane coordinates of SPCS 83. In these cases, the difference between the two definitions can also result in large direction and position location errors, in many cases reaching tens of feet for SPCS 83 coordinates.

Because of this situation, there has been a long history of misunderstandings and confusion over which definition of the foot was used to carry out a specific land survey or civil engineering project. There have been many instances where software or electronic surveying devices default to one or the other foot definitions, but users incorrectly assume the actual unit of measure in use. This ongoing ambiguity has resulted in professional liability by the inadvertent violation of State law, the introduction of systematic errors in surveying and engineering projects, misreported position and location, land sale and project delays, boundary disputes, additional costs associated with correcting unit mistakes, and other unintended consequences. Because State jurisdictions with different legal definitions of the foot share borders, mapping projects in these geographic zones may experience elevated error risks as a surveyor transitions between a State that uses the "U.S. survey foot" and a State that uses the "international foot." This risk is exacerbated when professional surveyors and engineers are licensed to practice in multiple States that use different versions of the foot, and for large projects when the team participants come from different States and even different countries. In addition to the cost due to errors, there is the cost of inefficiency, since it is necessary to keep track of the foot version, which increases with the size, duration, and complexity of projects.

Opportunity To Eliminate Confusion

Since the publication of the 1959 Federal Register notice, experience has overwhelmingly revealed that national uniformity cannot be ensured in this critical industry field when users are routinely confronted with two definitions of the foot. The best opportunity for eliminating the redundancy in values for the foot will occur with the NOAA program to modernize the NSRS in 2022.

The only practical solution is to deprecate the "U.S. survey foot" and to require that its use in surveying, mapping, and engineering be discontinued. Allowing the continued use of two definitions of the foot undercuts the value and benefit of national uniformity, and allows for additional opportunities for confusion and unnecessary costs to the users, the States, and professionals in the surveying, mapping, and engineering fields. No compelling justification to maintain two definitions for the foot exists.

Notice From the Director of the National Institute of Standards and Technology Regarding the Deprecation of the "U.S. Survey Foot" on December 31, 2022

Under Article 1, Section 8 of the United States Constitution, Congress retains the power to "fix the Standard of Weights and Measures." Throughout that section, the words "uniform throughout the United States" are used in conjunction with many of the other duties and responsibilities that are listed. The "fixing" or defining the standards of weights and measures is intrinsic to ensure uniform measurement across the U.S., as well as with the rest of the world. In 1866, Congress acted to make the metric system of measurement (now known as the International System of Units (SI)) legal for use in the United States (15 U.S.C. 204). On May 20, 1875 the U.S. signed the Meter Convention (known as the "International Treaty of the Meter"), which established the International Bureau of Weights and Measures, an intergovernmental organization under the General Conference on Weights and Measures that oversees the International Committee for Weights and Measures, which is the organization that maintains the SI to meet the measurement needs of the world. On April 5, 1893, the "Mendenhall Order," issued by the U.S. Coast and Geodetic Survey with the approval of the U.S. Secretary of the Treasury, determined that the U.S. Customary units of the yard and pound would be defined in terms of the SI units of the meter and kilogram. The practice of defining the U.S. Customary units of measurement in terms of the SI continues today.

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In 1988, Congress declared that the metric system was the preferred system of measurement for trade and commerce in the United States (15 U.S.C. 205b). The Director of the National Institute of Standards and Technology is authorized by statute "to develop, maintain, and retain custody of the national standards of measurement, and provide the means and methods for making measurements consistent with those standards" (15 U.S.C. 272(b)(2)), "to assure the compatibility of United States national measurement standards with those of other nations" (15 U.S.C. 272(b)(9)), and to "cooperate with the States in securing uniformity in weights and measures laws" (15 U.S.C. 272(c)(4)). Under this Start Printed Page 55564authority, the SI is interpreted or modified by the Director of NIST for use in the United States. The SI is used exclusively to define, establish, and maintain the U.S. national standards of measurement and in securing uniformity of their use in the laws of the States.

"Deprecation" is a term widely used in the field of legal metrology and other measurement science fields of study. It describes a decision to discontinue the use of a specific measurement unit or method of sale. A unit of measurement (e.g., the foot or gallon) though legal, may be prohibited from being used in a specific commercial application if, for example, it has been identified as being redundant or a source of confusion, or if it could frustrate the ability of users to make quantity and value comparisons. For example, gasoline and other engine fuels are permitted to be sold from a retail service station by the gallon but may not be sold by the fluid pint or fluid ounce. As the situation with multiple definitions for the foot illustrates, measurement unit uniformity is only possible when a single measurement unit definition is used for a specific application (e.g., land surveying).

The deprecation process begins with a notice to users that a unit of measure is to be deprecated and that use of the unit is to be avoided after a specific date. The notice also prescribes the new unit of measurement that will be accepted for use. The notice period allows users time to make the necessary changes to their measuring practices, processes, procedures, and devices. The notice period also provides an opportunity for education and training for all of those involved in the changeover and the identification of unforeseen issues so that appropriate preventive actions, exceptions, or additional requirements can be developed and implemented. After the notice period ends, the deprecated measurement unit is deemed obsolete, its use is to be avoided, and it is retained for historical purposes and legacy applications only.

Deprecation of the Survey Foot, Survey Mile, and Other Measures Derived From the Survey Foot
On December 31, 2022, the 1893 "U.S. survey foot," as defined in a 1959 Federal Register notice (24 FR 5348, June 30, 1959), will be deprecated as a U.S. national standard of measurement and its use is to be avoided. The 1893 definition of the "U.S. survey foot" will be retained for historic reference but will be deemed obsolete. This notice also applies to the "U.S. survey mile" (equal to approximately 1609.347 meters), which is based on the "U.S. survey foot," the use of which should also be avoided after December 31, 2022 and which will be retained for historical purposes but will be deemed obsolete. After December 31, 2022, any data derived from or published as a result of surveying, mapping, or any other activity within the U.S. that is expressed in terms of feet shall only be based on the "foot" equal to 0.304 8 meter (exactly), formerly known as the "international foot" in the 1959 Federal Register notice.

Likewise, other measures previously based only on the "U.S. survey foot" will be defined using the foot equal to 0.304 8 meter (exactly) after December 31, 2022. These measures are the "chain," "link," "rod" (also "pole" or "perch"), "furlong," and "fathom" for length, and the "acre" for area. Decimal SI equivalents for these measures are given in Table 1 for both the "U.S. survey foot" (approximate) and the "foot" (exact). For these measures, the difference between the two types of feet is usually of no practical consequence. For example, the greatest precision typically used for the chain in modern land surveying practice is three decimal places (or 0.1 link), and at that level of significance both versions of the foot give the same value. Similarly, the difference in area for 1 acre is only 0.000 004 acre (0.17 ft2) for the two foot versions.

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Table 1—Approximate Decimal SI Equivalents for Measures Commonly Given in "U.S. Survey Feet" and Exact Equivalents for the "Foot" That Will Be Adopted After December 31, 2022 in NIST SP 811, The NIST Guide for the use of the International System of Units

Unit of measure based on feet	Type of quantity	"U.S. survey foot" (approximate)	"foot" (exact)
foot (ft)	length	0.304 800 6 . . . m	0.304 8 m
mile (mi)	length	1609.347 . . . m	1609.344 m
chain (ch)	length	20.116 84 . . . m	20.116 8 m
link (li)	length	0.201 168 4 . . . m	0.201 168 m
rod (rd), pole, perch	length	5.029 21 . . . m	5.029 2 m
furlong (fur)	length	201.168 4 . . . m	201.168 m
fathom	length	1.828 804 . . . m	1.828 8 m
acre (ac)	area	4046.872 609 9 . . . m^2	4046.856 422 4 m^2

In keeping with the terms of this notice, the "U.S. survey foot" will no longer be supported by NOAA in the modernized NSRS after 2022, including the State Plane Coordinate System of 2022 (SPCS2022), elevations, and all other components of the system. However, the "U.S. survey foot" will be permanently maintained in NOAA products and services for legacy applications, for example the computation of SPCS coordinates in States where it was specified for SPCS 83, and for all zones of SPCS 27.

NEWS & VIEWS
National Society of Professional Surveyors

Opponents to state licensing requirements call for reform
NSPS, February 12, 2020

There is a national movement to reform occupational licensing laws that are frivolous, restrict commerce, and erect barriers to market entry. NSPS is pointing out that licensure of the design professions – architecture, engineering and surveying – should not be painted with a broad brush as licensing in these professions protect public health, safety, and welfare. A new poll shows a large segment of the American public agrees. NSPS will be promoting the public health, safety, and welfare benefits of design professional licensure during its Day on the Hill in Washington, DC on April 1.

Alliance for Responsible Professional Licensing (ARPL) Conducts Study on Deregulation of Professional Licensing
NSPS, February 5, 2020

There is a national movement to reform occupational licensing laws that are frivolous, restrict commerce, and erect barriers to market entry. NSPS is pointing out that licensure of the design professions – architecture, engineering and surveying – should not be painted with a broad brush as licensing in these professions protect public health, safety, and welfare. A new poll shows a large segment of the American public agrees. NSPS will be promoting the public health, safety, and welfare benefits of design professional licensure during its Day on the Hill in Washington, DC on April 1.

NSPS Surveyor Says! Podcast introduces 'The Chat Show'
NSPS, December 18, 2019

The NSPS Surveyor Says! Podcast proudly introduces "The Chat Show," a new series based upon "Get Kids into Survey" and will discuss the educational program that has produced those great surveying posters and comics targeted at elementary children. This series opener features "two birds and a bloke" discussing the success of the program and where it is going next. The "birds" consist of Elly Ball, CEO of "Get Kids into Survey," and located across the "pond" in Yorkshire, England, and Trish Milburn, Office Manager for NSPS in the national headquarters in Frederick, Maryland. The "bloke" is Tim Burch, Vice President of NSPS and Brand Ambassador for Get Kids into Survey program. Together, these three have worked to build the "Get Kids" program in North America with 20,000+ posters shipped to date. This series will follow new poster releases and other exciting adventures by the GKIS team.

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For more information about ordering posters as well as downloading coloring sheets of various scenes, please visit the NSPS website and click on the "Get Kids into Survey" button.

https://www.nsps.us.com/
https://beasurveyor.com/get-kids-into-survey

Listen on Podbean, Spotify, iTunes, iHeartRadio, and Google Podcasts.

Congress awaits NSPS for April 1 Day on the Hill

NSPS, December 18, 2019

Both the U.S. House and Senate have released their 2020 legislative calendars and the good news is both bodies will be in session in Washington, DC on Wednesday, April 1 for the NSPS Day on the Hill. Mark your calendar and plans to attend the 2020 NSPS Spring Business Meeting and Day on the Hill.

Join the NSPS 'PLAT' Team

NSPS, December 18, 2019

The NSPS Political and Legislative Alert Team (PLAT) is an arm of NSPS that mobilizes grass roots action on national public policy issues of interest to the surveying profession. The purpose of PLAT is to identify and engage a team of "Advocacy Volunteers" consisting of Surveyors who know, have relationships with, or are willing to establish relationships with members of Congress to influence policy in a manner favorable to the profession. Learn how to "sign up":

https://www.nsps.us.com/page/PLAT

Safe UAS operations hampered by lack of communication

NSPS, December 4, 2019

A recent Government Accountability Office (GAO) report found that law enforcement is an important source of information when they investigate potentially unsafe small unmanned aircraft system (UAS) operations. The FAA

inspectors also told GAO that they take actions to educate operators or enforce penalties, in line with FAA policies, but that they face several challenges, including obtaining key information for investigations. Inspectors explained that of the multiple sources that may provide information for UAS investigations, reports from state and local law enforcement generally provide the most useful and actionable information. However, most law enforcement stakeholders GAO met with stated that officers may not know how to respond to UAS incidents or what information to share with FAA. While FAA has articulated the pivotal role local law enforcement can play, and has developed resources for these entities, FAA has not consistently communicated this information to its law enforcement partners. Without a clear approach to communicate to the tens of thousands of state and local law enforcement agencies across the country, FAA does not have reasonable assurance these agencies are armed with knowledge they need to help FAA identify and address unsafe UAS operations.

Source: DJI. | www.gao.gov

Michigan DOT uses unmanned survey boats for bridge inspections

NSPS, December 4, 2019

The Michigan Department of Transportation (MDOT) is using new unmanned boats to assist with bridge inspections. The new technology is meant to help inspectors check for damage to a bridge's structure during high-water events. MDOT has identified about 1,600 bridges across the state which it has classified as scour critical. This means they're in need of close monitoring during high-water events, something MDOT hopes the new unmanned boats will make safer and more efficient. Called Sonar EMILY, the boats are just four feet long, two feet wide and one foot tall and can be controlled by an inspector from shore. Currently inspectors probe the bottom of the channel with metal rods, weighted tape measures or sonar devices to check for that erosion. Units are equipped with sonar, which allows them to produce scans of the area around a bridge's substructure, in addition to 360-degree cameras on the top. Michigan currently has four units spread across the state. They're located in Gaylord, Kalamazoo, Lansing and Saginaw, and are easily transportable to anywhere that needs them. Each unit costs about $50,000. Michigan is currently the first state in the nation to use the technology for bridge inspections.

President Trump plan to push seafloor mapping wins warm reception

NSPS, November 27, 2019

The White House has announced a new push to examine 11.6 million square kilometers of undersea territory. President Donald Trump this week signed a memorandum ordering federal officials to draft a new strategy that would accelerate

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federal efforts to map and explore these reaches. The 19 November declaration comes at a time of growing interest in mapping the world's ocean floors. A consortium of scientists from around the world is working to create a complete, detailed picture of the global seabed by 2030. Nations are probing the ocean floor in search of valuable minerals, oil, and gas. In 2021, the United Nations will launch what it's calling the decade of ocean science. The new presidential memo directs the White House's Ocean Policy Committee to, within 6 months, draft a strategy to map U.S. territorial waters, which stretch 320 kilometers from the coast. Today, roughly 40% of that area is charted, according to the National Oceanic and Atmospheric Administration (NOAA). It puts special emphasis on coastal waters around Alaska, where mapping is particularly sparse, and pressures including coastal erosion, climate change, and offshore oil exploration are converging.

NSPS attends GPS Caucus event on Capitol Hill

NSPS, November 20, 2019

NSPS Executive Director Curtis Sumner, pictured here with Rep. Dave Loebsack (D-IA), and Federal Lobbyist John "JB" Byrd attended the Congressional GPS Tech Demo Day organized last week by the GPS Innovation Alliance, of which NSPS is an affiliate member. As founder of the House GPS Caucus, Loebsack was joined by fellow Reps. Anna Eshoo (D-CA) and Doug Lamborn (R-CO) in providing remarks and discussing the importance of the role GPS plays in our national economy.

GPS Innovation Alliance

Surveyors' work requires a 'more complicated receiver'

NSPS, November 6, 2019

SCIENTIFIC AMERICAN

A recent article in the Scientific American publication Knowledgeable Magazine notes "Scientists, surveyors, the military and others often need a very precise GPS location, and all it takes is a more complicated GPS receiver". To our minds, Surveyors being mentioned as being among the group whose work requires a more complicated GPS receiver lends credibility (perhaps inadvertently) to the fact that not every GPS unit can be depended upon to "pinpoint a spot of the Earth's surface". As Surveyors know well, there is a misconception which often leads to the misidentification of property corners/lines by those who do not understand this fact. It is flattering that Surveyors are mentioned in the article, and hopefully the "all it takes……" wording won't be inferred to mean that anyone with a "more complicated GPS receiver" has the knowledge/experience/license/authority to identify or set property corners/boundaries.

In Memory of D. Nelson Mackey

D. Nelson Mackey, age 79, of Ozark, MO passed away on 1/9/2020, at 1:44 pm in his home with family by his side.

Nelson was born on March 14, 1940, in Rome, MO and spent a majority of his childhood fishing and swimming Big Beaver Creek. He was the son of John Durward and Ruby (Sturman) Mackey. Nelson was the fifth child of seven. Nelson attended grade school at Walnut Grove. He was a 1959 graduate of School of the Ozarks High School, Point Lookout, MO. Nelson proudly served in the Army National Guard from 1960 to 1962 until Honorable Discharge. He earned an Associate Degree in 1962, from School of the Ozarks, Jr. College. Nelson helped lay the steel and stone and set the bell tower on the Williams Memorial Chapel while at School of the Ozarks. He completed his undergraduate studies at Southwest Missouri State College in Springfield, where he earned a B.A. in Business. He attended Rolla School of Mines on the campus of Southwest Missouri State to become a Professional Land Surveyor in 1992. Nelson worked as an Industrial Engineer with Dayco, Inc. in Springfield, MO for over 37 years along with operating family businesses.

Nelson married Joyce Elaine Trost on May 26, 1962, who was born and raised in Green Forest, AR. They have three children: Bradley Nelson Mackey (wife Kara, and Brad's children Tyler (wife Monica), Ryan, Brandon, and Kara's children Faith and Cami Webb) of Branson, MO; Barry Durward Mackey (wife Sarah, and their children, Emma and Gavin) and Buffy Elaine (Mackey) Spencer (husband Jason, and their children, Bethany, Eden and Caleb) all of Ozark, MO. In his semi-retirement years, Nelson enjoyed researching family genealogy resulting in travel to Mackey Bend, KY, fishing, researching land deeds, watching the grandkids in all school activities and watching local high school and college basketball.

Nelson made a profession of faith in Christ at the Free Methodist Church Brush Arbor revival and was baptized in Beaver Creek in Rome, MO. Nelson was a member of First Baptist Church of Ozark, MO. He especially enjoyed meeting people through the FAITH visitation program where they shared the love of Christ in their community.

Nelson was preceded in death by his parents, brothers, James Arthur, Ray Harlin, Franklin, and Sturman Mackey; brother-in-law, Leroy Morrisset, and nephew, Gregory Allan Mackey.

Nelson is survived by his wife Joyce, sisters Judith Ann Morrisset and Ruby Jane and her husband Larry Burton all of Ozark, sister in laws Judy Mackey of Prairie Grove, AR and Louise Mackey of Independence, MO. In law survivors include, Kenneth and Pam Trost of Rupert, ID and Eldon and Jan Trost of Berryville, AR. He is also survived by children, grandchildren, nieces, nephews, and other family/friends.

Services were held at First Baptist Church of Ozark, 1400 W. Jackson Street Ozark, MO 65721 on 1/18/2020. Visitation was from 9:00 am to 11:00 am. Services were held at 11:00 am conducted by Dr. Phillip Burden. Memorial donations may be made to College of the Ozarks alumni association or First Baptist Church Ozark, MO missions fund.

Missouri Society of Professional Surveyors
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Jefferson City, Missouri 65102